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(54) Title: HAZARD-FREE MICROENCAPSULATION FOR STRUCTURALLY DELICATE AGENTS, AN APPLICATION OF STABLE AQUEOUS-AQUEOUS EMULSION

(57) Abstract: This invention provides method for sustained release delivery of structurally delicate agents such as proteins and peptides. Using a unique emulsion system (Stable polymer aqueous-aqueous emulsion), proteins and peptides can be microencapsulated in polysaccharide glassy particles under a condition free of any chemical or physical hazard such as organic solvents, strong interfacial tension, strong shears, elevated temperature, large amount of surfactants, and cross-linking agents. Proteins loaded in these glassy particles showed strong resistance to organic solvents, prolonged activity in hydrated state, and an excellent sustained release profile with minimal burst and incomplete release when being further loaded in degradable polymer microspheres. This invention provides a simple yet effective approach to address all the technical challenges raised in sustained release delivery of proteins.